

CLAIMS

What is claimed is:

1. In a global computer network having at least one node broadcasting live events over the network, a method of providing to a user desired ones of said live
5 broadcasts shifted in time comprising the computer-implemented steps of:
receiving from a user a request for content of the broadcast of at least one certain future event, the request indicating date, time and network location of respective broadcasts of each requested event;
recording at a working server, the respective broadcast of each requested
10 event according to the date, time and network location indicated in the request, each broadcast being in the form of live streamed video-audio data over the network such that said recording records corresponding streamed video-audio data of the respective broadcast of each requested event; and
upon user command to view a certain one of the requested events,
15 providing the recorded streamed video-audio data corresponding to said certain one of the requested events to a digital player for user viewing therefrom, said viewing being in a manner time shifted from original broadcast of the certain one of the requested events.
2. A method as claimed in Claim 1 further comprising the step of providing a
20 schedule of events to be broadcast live over the network, the schedule enabling the user to formulate a request.
3. A method as claimed in Claim 1 wherein the working server and digital player are local to each other in the network such that the step of recording at the working server includes recording local to the digital player.

4. A method as claimed in Claim 1 wherein the working server is at a third party site in the network remote from the digital player, such that the step of recording includes recording at a network site remote from the digital player.
5. A method as claimed in Claim 4 wherein the step of recording includes recording some of the respective broadcasts locally to the digital player and recording different ones of the respective broadcasts remotely from the digital player; and
further comprising the step of synchronizing between the local and remote recordings such that the step of providing the recorded streamed video-audio data is supported by both local and remote recordings in a manner transparent to the user.
6. A method as claimed in Claim 1 wherein the step of recording includes caching to cache storage, the streamed video-audio data corresponding to the respective broadcasts of the requested events.
7. A method as claimed in Claim 6 wherein the step of caching includes overwriting the streamed video-audio data in the cache storage corresponding to one of (i) the event viewed longest ago by the user and (ii) the least recent broadcast event.
8. A method as claimed in Claim 6 wherein the step of caching includes providing a searchable index to the streamed video-audio data in the cache storage.
9. A method as claimed in Claim 8 wherein the step of providing a searchable index includes providing in the index, header information from respective original broadcasts.

10. A method as claimed in Claim 8 wherein the step of providing a searchable index includes for each streamed video-audio data in the cache storage, providing interface means for enabling the user to indicate preference for saving or deleting the streamed video-audio data when the cache storage is full.
- 5 11. A method as claimed in Claim 6 further comprising the step of for each streamed video-audio data in the cache storage, providing a respective summary of the corresponding event, said summary being displayable to the user.
12. A method as claimed in Claim 1 further comprising the step of scheduling broadcasts to be recorded across multiple users and their requests.
- 10 13. A method as claimed in Claim 12 wherein the step of recording includes storing the streamed video-audio data corresponding to respective broadcasts for a length of time determined according to user demand across the multiple users.
14. In a global computer network having at least one node broadcasting live events over the network, apparatus for providing to a user contents of desired ones of said broadcasts shifted in time, comprising:
 - 15 user interface means for enabling a user to form a request for contents of desired broadcasts of future live events, said request including date, time and network location of each desired broadcast;
 - a working server coupled to the user interface means to receive requests
 - 20 formed by users, the working server recording the respective broadcast of each requested event according to date, time and network location indicated in the request, each broadcast being in the form of live streamed video-audio data over the network, such that the working server records corresponding streamed video-audio data of the respective broadcast of each requested event; and

video-audio output means coupled to receive the recorded streamed video-audio data from the working server, such that upon user command to view a certain one of the requested events, the video-audio output means provides respective broadcast contents from the recorded streamed video-audio data for user viewing of the certain requested event, in a manner time shifted from time of original broadcast of the certain requested event.

15. Apparatus as claimed in Claim 14 further comprising a schedule source providing a schedule of events to be broadcast live over the network, the schedule enabling the user to formulate a request.

10 16. Apparatus as claimed in Claim 14 wherein the working server and video-audio output means are local to each other in the network such that the working server records local to the video-audio output means.

15 17. Apparatus as claimed in Claim 14 wherein the working server is at a third party site in the network remote from the video-audio output means, such that the working server records at a network site remote from the video-audio output means.

20 18. Apparatus as claimed in Claim 17 wherein the working server records some of the respective broadcasts locally to the video-audio output means and records different ones of the respective broadcasts remotely from the video-audio output means, and

further comprising a synchronizer coupled to the video-audio output means for synchronizing between the local and remote recordings, such that the video-audio output means is supported by both local and remote recordings in a manner transparent to the user.

19. Apparatus as claimed in Claim 14 further comprising a caching system including a cache storage for caching the streamed video-audio data corresponding to respective broadcasts of the requested events recorded by the working server.
20. Apparatus as claimed in Claim 19 wherein the cache system overwrites the
5 streamed video-audio data in the cache storage corresponding to one of (i) the event viewed longest ago by the user and (ii) the least recent broadcast event.
21. Apparatus as claimed in Claim 19 wherein the caching system provides a searchable index to the streamed video-audio data in the cache storage.
22. Apparatus as claimed in Claim 21 wherein the searchable index includes header
10 information from the respective original broadcast.
23. Apparatus as claimed in Claim 21 wherein the searchable index includes interface means for enabling the user to indicate preference for saving or deleting the streamed video-audio data when the cache storage is full.
24. Apparatus as claimed in Claim 19 wherein the cache system includes for each
15 streamed video-audio data in the cache storage a respective summary of the corresponding event, said summary being displayable to the user.
25. Apparatus as claimed in Claim 14 further comprising a scheduler coupled to the working server, the scheduler scheduling broadcasts to be recorded across multiple users and their requests.
- 20 26. Apparatus as claimed in Claim 25 wherein the working server further stores the streamed video-audio data corresponding to respective broadcasts for a length of time determined according to user demand across multiple users.

27. Apparatus as claimed in Claim 14 wherein the video-audio output means includes one of a television, a computer system and a video cassette recorder.

28. A method for providing broadcast data shifted in time comprising the computer implemented steps of:

5 receiving requests from users to record respective desired broadcast programs;
recording streamed multimedia data forming the respective desired broadcast programs; and
10 using the recorded streamed multimedia data, enabling user viewing of a corresponding broadcast program at a time subsequent to original broadcasting of said program.

29. A method as claimed in Claim 28 wherein the step of recording includes storing by caching.

30. A method as claimed in Claim 29 wherein said caching overwrites and saves
15 streamed multimedia data as a function of number of user requests for the corresponding broadcast program.

31. A method as claimed in Claim 28 wherein the step of enabling user viewing includes supporting a multimedia rendering of the corresponding desired broadcast program through one of a television, computer system and video
20 cassette recorder.